

# Research as Part of the Web Site Development Process: The Case of School Libraries Online

Laurel A. Clyde

*Faculty of Social Science, University of Iceland, Iceland*

*IASL's Webmaster discusses the part that research has played in the ongoing development of IASL's Web site School Libraries Online. Established in 1995, the Web site was 10 years old at the time this article was written; a brief history of the site is provided. Work on the site has been guided by a strategic planning process in the context of which research results have informed decision-making. Desk research provided background information that was important in the establishment of the Web site. This included an "internal environment" scan that focused on developing an understanding of the Association and its members and an "external environment" scan that focused on Internet trends and developments. With the site well established, ongoing environment scanning has continued to inform development. Users' needs have been monitored on an ongoing basis through two main strategies: analysis of the weekly and monthly reports from the Web site search engine, and analysis of the statistical information provided by a user tracking service. User satisfaction with the Web site has been monitored through strategies such as analysis of responses to a Web-based survey form and comments recorded in an online guest book. The results of this ongoing formative evaluation will also feed into a major project, started in 2005 with a literature review, to evaluate School Libraries Online after a decade in operation. The article concludes with some comments about the place of evaluation in the Web site development cycle and the need for this major evaluation after 10 years of operation.*

## Introduction

*School Libraries Online* (<http://www.iasl-slo.org/>) was established in 1995 as the Web site of the International Association of School Librarianship (IASL). It began as a small collection of 12 Web pages hosted on a main-frame computer at the University of Iceland in Reykjavík. Today, hosted by a commercial Internet service provider (ISP) in Vancouver, Canada, but still maintained from Reykjavík, it is the largest specialist Internet destination for school librarians with around 1,000 pages of information and a number of online information services for its users. I have been Webmaster from the beginning. The original intention was simply to provide a useful Web site for a professional association and its members in accordance with the then-current Web practices. Continued development of the site, taking into account new Web standards and practices and the evolving needs of school librarians worldwide, has meant that *School Libraries Online* has moved well beyond the scope of the original vision. Established with no budget, the Web site now receives an annual allocation of funds from IASL. However,

it still remains basically the work of a volunteer Webmaster working in collaboration with IASL officers who provide some of the content for the site.

Continuing development of *School Libraries Online* is supported by a strategic planning process (see Figure 1) that includes monitoring of Internet trends and changes, a focus on users and their needs, strategies for the identification and selection of new content and services, and ongoing formative evaluation. Research has played an important part in this strategic planning process through the years, from the desk research on which the original environment scan was based, to the commercial Web-based monitoring services that provide information about users of the site today. Research has contributed to ongoing formative evaluation of the site and has also led to many changes over the years, so the Web site we see on our screens today scarcely resembles the site as it appeared in 1995. Thus the development of *School Libraries Online* provides a case study in the application of research results to Web site development, showing how research has informed decision-making even in a situation where financial and other resources are tight. Before discussing the contribution of research to the development of *School Libraries Online*, though, it is appropriate to look briefly at the history of the Web site.

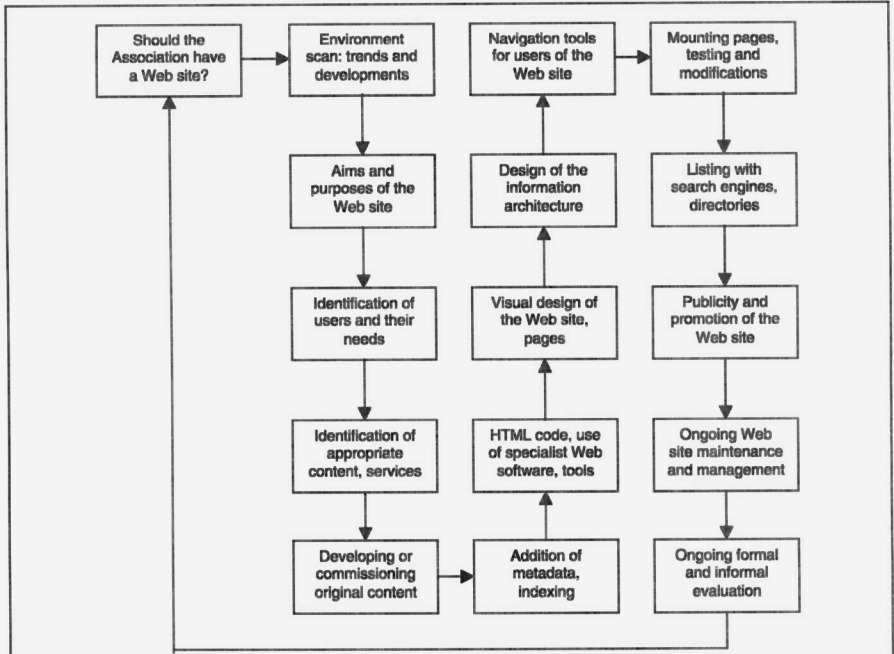


Figure 1. The strategic planning/development cycle for *School Libraries Online* (based on Clyde, 2000). Note that only some parts of the cycle are discussed in this article.

## History of School Libraries Online

Although the IASL Web site was only 10 years old in 2005, and its management has been in the hands of the one Webmaster through the decade, reconstructing its history is not a simple matter because already some of the evidence has disappeared. However, sources still available (apart from human memory) include surviving copies of old Web pages, correspondence files, annual reports of the Webmaster, and articles and papers written about the Web site through the years. In addition, some sets of data about use of the site, collected in various ways, still survive in printout or electronic form.

### *Early Days*

An article published in the Australian professional journal *Orana* in 1998 records that "the issue of an Internet presence for IASL was first raised at the annual conference in 1994" (Clyde, 1998a, p. 12). This discussion resulted in the establishment of the IASL-LINK listserv on a mainframe computer called Hengill at the University of Iceland; IASL-LINK is now a Yahoo! group managed by Peter Genco (USA).

With the problem of a listserv solved, the question of a web presence for IASL was raised at the 1995 annual conference, held in Worcester, England. However, no decisions were made, and though some of the officers of the Association (most notably Dr. Jean Lowrie) thought that IASL should have at least a home page, nobody seemed anxious (or even willing) to take on the task. One dark Arctic winter weekend, bored with the offerings on television in Reykjavik (and with the alternative, marking undergraduate assignments), I decided to try the job myself ... Both web site and Webmaster have come a long way since the first experimental pages for IASL were mounted late on a Saturday night in November 1999. (pp.12-13)

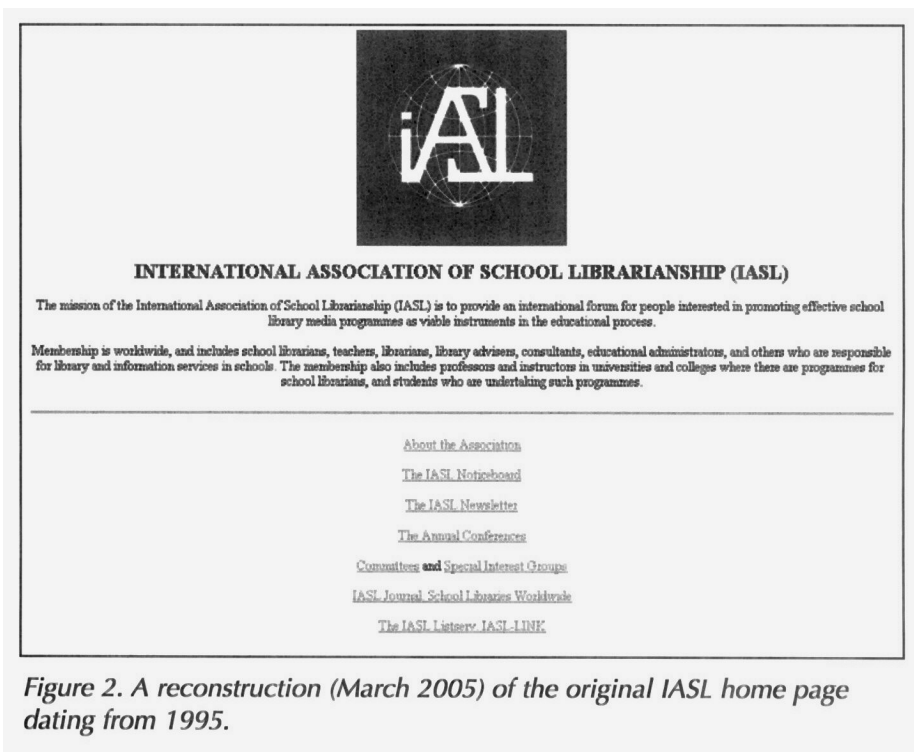
Like the IASL-LINK listserv, the Web site was initially hosted on Hengill at the University of Iceland. Maintained by the University's Computing Services, Hengill was then a state-of-the-art UNIX-based mainframe connected to the Internet by a fast fiber-optic link. The 1998 *Orana* article records two advantages associated with this arrangement. First, the Web site was hosted on a large computer with a fast connection to the Icelandic Internet backbone; and second, that I was freed from any responsibilities associated with managing a Web server. However, the downside was that I had little say in the software that was available for Web site management and worked in a distinctly non-user-friendly UNIX environment. The availability of specialist Web site development software such as *Dreamweaver* in the later years of the decade made a difference to how Web pages were developed and opened up new design possibilities. Changes at University Computing Services in the late 1990s, coupled with the increasing size of the Web site, meant a move to a commercial Web site hosting service in Canada; we moved to our present ISP in Canada in 2003.

## *The Changing Web Site*

There is no longer a visual record of what the first IASL home page looked like, although I wrote in 1998 that I had "preserved a copy on my own computer, and whenever I look at it now, I have to remind myself that all Web pages looked as naïve as that back then" (Clyde, 1998a, p. 13). A computer crash in 2001 disposed of my copy of this first home page (along with the complete contents of my hard disk). For a while, the Internet Archive's Wayback Machine (<http://www.internetarchive.org/>) preserved copies of versions of the home page back to 1996; today it has no copies farther back than 2001, and it offers no explanation for the deletions. Clearly it is not possible to rely on external services to maintain the historical record.

Figure 2 presents a March 2005 reconstruction of that first IASL home page based on my memory; on descriptions that I wrote for professional newsletters and conferences in 1996 and 1997 about the early Web site (Clyde, 1997a); on printouts of Web standards from 1995; and on the HTML (HyperText Markup Language) code in old pages that still survive on my teaching Web site at the University of Iceland (<http://www.hi.is/~anne/>).

Figures 3, 4, and 5 show the development of the Web site through the decade. The use of HTML tables made it possible to make the change from the simple list of topics on the first home page to the keypad format in use a couple of years later (Figure 3). With the increasing number of pages on the site (more than 200 by October 1998, Clyde, 1998a), the keypad eventu-



*Figure 2. A reconstruction (March 2005) of the original IASL home page dating from 1995.*

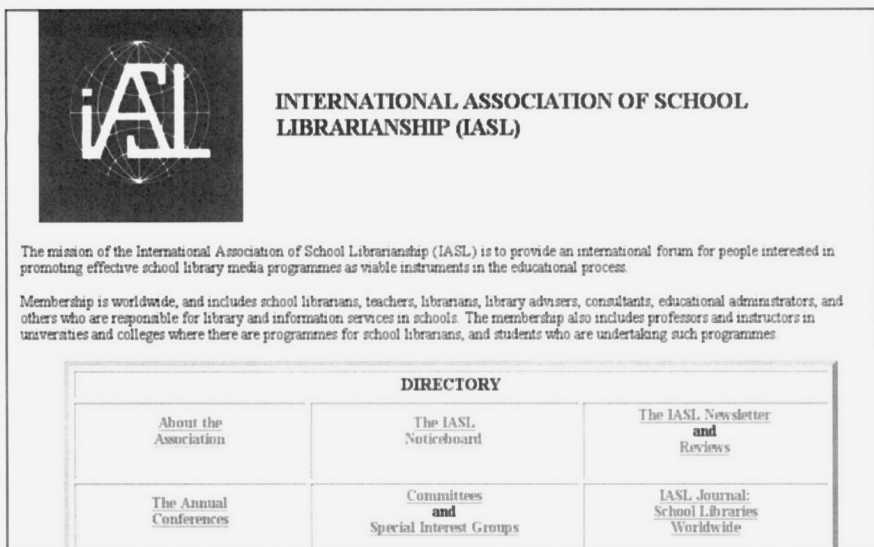


Figure 3. The home page on the IASL web site *School Libraries Online* as it appeared in September 1998.

ally proved inadequate as a means of access to the content, and so the first version of the home page with a Yahoo-style site directory was created (Figure 4). Figure 5 shows that the site directory has been retained to this day, supported now by a site search engine. This version also shows the influence of a professional designer, Peter Rugendyke (Western Australia), from whom a masthead and some logos were commissioned.

Although the copies of the home page that appear in Figures 3-5 can be dated (from the last update date at the bottom of the page), it is nevertheless impossible now to document the precise sequence and timing of the



Figure 4. The home page of the IASL web site *School Libraries Online* as it appeared in March 1999.



Figure 5. The home page of the IASL web site *School Libraries Online* as it appeared in March 2005 (as this article was being written).

changes, as they were mostly implemented gradually. For example, in 2002, with more than 900 pages involved, a major change like adding the new masthead and menu bar to all pages took more than four months to implement fully. Even the re-branding of the IASL Web site as *School Libraries Online* (in 1999) was a gradual process. It was undertaken because audience reactions to a demonstration of the site at a conference in South Africa in that year suggested that people had low expectations of the Web sites of professional associations and assumed in advance that they would be boring.

### *The Site Search Engine*

One of the advantages of moving the IASL Web site from the University of Iceland server to an ISP in Canada was that it became possible to install a site search engine, a feature that seemed desirable given the current number of pages on the site and the variety of information provided through various sections. This then raised the question of what kind of search engine, given the amount and type of information on the site and the needs of the users. Site search engines that might be appropriate fell into three main categories. These were external site search services provided free by public Internet search engines such as Google; external site search services provided free or for a fee by private companies; and search engines installed on the server itself (some of which could be purchased and others leased for an annual fee). Over almost a year, several search engines were tested by making them available to selected groups of users. The FreeFind search engine was selected as a result of this process.

FreeFind is an external search engine provided by a company in the United States. To users of the Web site, it appears that the search engine is located on the site. Both the text of the pages themselves and the metadata

(keywords and information about page content provided as part of the underlying code of the pages) are indexed by the search engine's crawler. Thus the selection of FreeFind led to another (and still ongoing) change: the provision of more comprehensive metadata on the site; although unseen by users, the metadata improves the search results of our site search engine. An additional but unforeseen consequence has been better representation of IASL pages in the search results of public search engines such as Google and Yahoo that also use metadata to assemble their search results.

### *The Web Site Today*

The site directory on the home page of *School Libraries Online* (see Figure 5) provides an overview of the main sections of the Web site as it exists today (March 2005). Sidebars highlight specific collections, documents, tools, or services of particular interest. Collections of documents on *School Libraries Online* include a substantial and growing file of original reviews of professional materials, the full text of significant papers delivered at IASL conferences, the full text of selected articles from the print *IASL Newsletter*, abstracts of all articles in the Association's research journal *School Libraries Worldwide*, and abstracts of research papers presented at IASL conferences. An online newsletter called *Happenings* (really a Weblog or blog, but created before specialist blogging software was readily available) is updated at least twice a week with short articles about school library-related events and documents. The section "School Library Resources on the Internet" serves as a portal or subject gateway to Internet resources for school library personnel, in line with the ideas of Koch (2000) and Dempsey (2000), as implemented in the Electronic Libraries Programme (e.lib) in the United Kingdom. It provides links to hundreds of resources and services in the fields of education and school librarianship, including Web sites related to literacy, information literacy, children's literature, reading promotion, library automation, and professional development opportunities, among other topics.

### *Ongoing Developments*

Even as this brief history of the Web site was being written, changes were in progress. As a result of a suggestion from an IASL Regional Director, a new section of *School Libraries Online* was under development comprising a gallery of photographs of school libraries around the world. *School Libraries Online* was hosting its first pages for another organization in the form of a set of conference pages for the IFLA (International Federation of Library Associations and Institutions) Section of School Libraries and Resource Centers and Section on Reading. After a number of experiments, a Nepalese translation of the IFLA/UNESCO School Library Manifesto became the first document in a non-European script to be made available on the Web site (in March 2005). Meanwhile, a Spanish translation of the IASL Policy Statement on School Libraries had been commissioned along with some new logos.

## Desk Research and the Establishment of the IASL Web Site

Three aspects of the strategic planning process were particularly important at the beginning of the Web site development process. The first was an environment scan covering aspects of the external and internal (IASL) environments in which the Web site would be made available. An analysis of Internet trends and developments and a study of the use being made of the Internet in schools in the first half of the 1990s helped to ensure that the Web site would be built in accordance with appropriate standards and the technology then available in schools to access the Internet. The second aspect of the strategic planning process was to establish the aims and purposes of the Web site, for which knowledge of the Association and its activities was needed. The third aspect was to identify potential users of the IASL Web site and analyze their needs for Web-based information.

### *The Environment Scan*

Environment scanning (sometimes called an environment audit) covered, among other things, development of the Internet itself; developments in browser software; developments in HTML standards and other relevant Internet standards and guidelines; school use of information technology (including new software); hardware and software in use in school libraries; the level of Internet skills of school librarians; and changes in the needs of school librarians. It involved monitoring listservs for school librarians and listservs and electronic newsletters that dealt with developments in the Internet itself. Searches of online databases on DIALOG, OCLC, and other services identified new publications and research reports that contained relevant information. All these sources provided background information that was necessary as a foundation for decisions about how a Web site for school librarians should be created and managed.

### *Establishing the Aims and Purposes of the Site*

The mission statement and objectives of IASL provided the basis for the initial development of the IASL Web site within the framework of a strategic planning process.

The mission of the International Association of School Librarianship (IASL) is to provide an international forum for those people interested in promoting effective school library media programs as viable instruments of the educational process. IASL also provides guidance and advice for the development of school library programs and the school library profession. (IASL, n.d.)

The objectives of the Association indicate that IASL will "advocate the development of school libraries throughout all countries"; encourage the integration of school libraries into the instruction and curriculum of schools; promote professional education for school librarians; foster a sense of community among school librarians around the world; encourage research in the field of school librarianship and the use of research results to improve practice, publish, and disseminate information about effective



school library programs; share information about school library programs and resources around the world; and initiate activities and conferences that will advance school librarianship (IASL, n.d.).

These objectives suggested that the Association's Web site should provide information and documents related to school librarianship, a means of sharing information among people involved in school librarianship around the world, resources for advocacy for school libraries, support for conferences and research, a medium for communication, a Web publishing service, and a base for projects that would further the Association's objectives. All these should support the development of school library services worldwide. In addition, it was assumed that the Web site would publicize the work of the Association and provide information about the Association and its activities for both members and non-members. Furthermore, because school librarians in 1995 were beginning to explore the Internet as a source of information (Clyde, 1997b), it was believed that the site should help them to find resources and services that were relevant to library and information services in schools.

### *Identifying the Users and their Needs*

Identifying potential users of the Web site and analyzing their needs in terms of a professional Web site was the third main aspect of the initial planning process. The IASL (n.d.) mission statement includes a statement about the members of the Association.

Membership is worldwide, and includes school librarians, teachers, librarians, library advisers, consultants, educational administrators, and others who are responsible for library and information services in schools. The membership also includes professors and instructors in universities and colleges where there are programs for school librarians, and students who are undertaking such programs.

In addition to identifying the main groups of members of the Association, this statement also identified the main potential user groups for the Web site. School library professionals (also known as school librarians, teacher-librarians, school library media specialists, school information managers, among other titles) and their needs have been the main focus of site development, but the work of a number of other groups has an effect on school library and information services. In keeping with the Association's aim to promote the development of school libraries worldwide, non-members of IASL are welcome to visit the site and to use most services.

Thus the documented objectives and activities of the Association, the opportunity to promote the Association and its objectives, and the needs of school librarians were the basis for the main sections of the Web site when it first went live in 1995. With some significant additions (but no deletions), they still form the basis of the site directory on the home page today. The additions reflect new activities of the Association since 1995 (e.g., the pro-

vision of reviews of professional materials) and the increasing use of the Web site in Association administration. However, as part of the ongoing environment scanning that is an aspect of the strategic planning process, the aims of the Web site and the needs of its users are kept under review.

### Understanding the Users

Early attempts to understand the users of the Web site concentrated on identifying the needs of the potential user groups identified in the desk research. Once the site was established and being used, then technical strategies and survey tools could be used to track user behavior and perceptions.

### *A Survey of Internet-Using School Librarians*

One of my own international research projects (Clyde, 1997b), conducted in the first half of the 1990s, was important for the early development of the site in that it studied Internet-using school librarians who might be presumed to be potential users. The findings of the study indicated, among other things, that school librarians have often taken a leadership role in using the Internet and introducing the Internet into their schools. This meant that when they themselves needed support and advice, they would probably look outside their schools. Being Internet users already, they could appreciate information provided via the Web, and it is probably no accident that Internet discussion lists for school librarians have been popular since the early 1990s.

Most (97.01%) of the school librarians who responded to the e-mail survey on which this study was based indicated that they used the Internet to make contact with people outside their school; 85% exchanged information on listservs and electronic bulletin boards; and 64% used the Internet to discuss professional issues. Clearly communication with other school librarians and experts was important to these potential users of the IASL Web site, so it was decided that the site should be developed with this in mind. In addition, school librarians used the Internet to gain information about resources (76.12%), to find curriculum-related information for teachers (68.66%), to locate information about educational research or developments for teachers or school administrators (65.67%), to expand the range of resources available in the school (61.12%), and to find information that would otherwise be difficult to locate (52.24%, Clyde, 1997a). Subsequent but less comprehensive unpublished research carried out in 2002-2003 suggested that communication in various forms and searching for information that would assist them in their work remained important applications of the Internet for school librarians. Both have been addressed in the development of *School Libraries Online*.

### *Ongoing Monitoring of Users and their Needs*

Some strategies have been used on an ongoing basis to collect information about users and potential users of the Web site and their needs for profes-

sional information. Monitoring of questions and discussion on school librarianship listservs such as IASL-LINK, LM\_NET (American international), OZTL\_NET (Australian international), SLN (UK) among others provides insights into the current information needs and concerns of school librarians in a number of countries. This is an ongoing form of desk research. For example, it was a question asked on several listservs within one week that led directly to the creation of a page of information about blogging for school librarians. The Web site is demonstrated to groups at conferences, and oral (and sometimes written) feedback is sought at the end of each session. The influence of comments made at a conference in South Africa is mentioned above. A user feedback form is available on the Web site for use by individuals and organizers of professional development workshops. Web tracker services (first a free service and now a commercial service) have been used since 1997 to track use of the site and to collect information about users. Weekly and monthly reports provided automatically by the site search engine since 2000 show the search terms being used and the number and type of searches being performed. A public online guest book solicits feedback from visitors to the site: a number of suggestions collected through this simple tool were implemented, but an increasing amount of spam targeted at Web site guest books meant that its usefulness declined over the years, and it was abandoned in 2003. Some of these strategies are discussed in more detail below.

### *User Tracking*

My article in *Orana* (Clyde, 1998a) shows that I was already experimenting with various tracking strategies to collect information about how people were using the Web site as a basis for planning.

It would be useful to have ... more information about who is using the site (and using particular pages), why those pages are being used, and which parts of the site are best meeting the needs of users. A "tracker" on the home page shows that use has been increasing steadily through the last year, with people accessing the site from many different countries, including countries where IASL has no members. However, the use of the tracer on the AltaVista search engine shows that some pages have many more "hits" than others, with the most popular pages in 1997/1998 being the 1997 conference page (which provided for online registration), the menu page for the "Links to School Library Resources on the Internet", and the home page itself. The statistics from the tracker indicate a high level of "return visits"—use of the site by people who have visited before; I would like to think that this is a vote of confidence, but for various technical reasons, these particular statistics are less reliable than others. The 'link' search feature of both the AltaVista and the Infoseek search engines shows that, along with the "hits" on the site, links to the site from other sites have also been increasing over the last year, suggesting that other webmasters have felt that the site is sufficiently useful to their users to create a link. However, these site monitoring strategies, and others like them, provide a very imperfect view of what is going on. (pp. 16-17)

Things have changed since 1998, and some of the changes have been for the better in terms of understanding users. AltaVista's tracer has disap-

peared, but Google now does a better job of identifying links to the site from other sites. At the time this 1998 article was written, the tracker being used was the free service from NetTracker, which provided information about the countries from which users came, the computers through which they were accessing the site, and the Web browser software they were using. In a 1999 conference paper (Clyde, 1999), I noted that this information was used in a variety of ways. For example, NetTracker reports indicated that most users of the IASL Web site were using older versions of browser software. This meant that I had to be conservative in coding the site and avoid adding features that would cause problems for users with older software. Then NetTracker's service disappeared, and so unfortunately did the statistics it produced (some lost with NetTracker's service, and some lost in the hard disk crash referred to above). This means that although we are now using a new commercial tracking service called OpenTracker, which provides a greater range of statistics about users and use of the Web site, it is not possible to look at changes in use over several years.

### *What Does the Webmaster Need to Know About Users?*

Questions to which the Webmaster needs answers on an ongoing basis include the following. What are users of the Web site looking for? Are they finding what they are looking for? What parts of the Web site are most used? Why are these parts of the site most used? Is use of the site increasing, and if so how? Is use increasing evenly across the site, or is use of some parts of the site increasing at a greater rate than that of others? How do users feel about their experience of *School Libraries Online*? How accessible is the Web site for people with disabilities and people who are using assistive technology? How easy is it for people to find the site through the public search engines? Some of these questions are addressed below to indicate how research can provide answers. Unfortunately, space does not permit dealing with more than a few of the possible questions.

#### *What are users of the Web site looking for?*

The weekly and monthly reports provided by the site search engine show the keywords and search terms being used. Figure 6, an extract from the search terms report from February 2003, gives an indication of the nature of these reports. Readers will see evidence here for a study of the information-seeking behavior of users of a professional Web site, although this is beyond the scope of this article.

Table 1 shows the most commonly used search terms (those used 10 or more times) in the three-month period September to November 2001. It suggests that, in keeping with the aims of the Web site, users are mostly searching for information about professional topics in the field of school librarianship. Perhaps inevitably, keywords like *sex* and *Elvis* were used, but only once or twice a month. However, there is cause for concern in the list of keywords used fewer than 10 times: the terms *job/jobs* and *employment*

both appear nine times. This reflects a suggestion made often at conferences, that *School Libraries Online* should include information about employment opportunities in other countries. With a volunteer Webmaster and volunteer information providers, it has not been possible to provide this kind of time-critical service, although we recognize that people are interested in this information. At present, the best strategy seems to be to provide links to other sources of employment information, for example, in the section of the Web site devoted to the International Focus Special

Most Recent Queries			
-----			
Day	Time of Query		Query
---	---	---	---
Mon	Feb 17 13:18:30	2003	selection
Mon	Feb 17 13:17:56	2003	selection+book
Mon	Feb 17 12:44:37	2003	"suicide information"
Mon	Feb 17 12:44:08	2003	suicide information
Mon	Feb 17 12:43:39	2003	suicide information
Mon	Feb 17 12:38:31	2003	suicide
Mon	Feb 17 12:17:30	2003	Allison Bernstein
Mon	Feb 17 12:16:37	2003	flexible scheduling
Mon	Feb 17 09:10:57	2003	weeding
Mon	Feb 17 08:57:39	2003	rules "international school"
Mon	Feb 17 08:56:49	2003	"international school"
Mon	Feb 17 08:56:04	2003	international school library
Mon	Feb 17 07:56:13	2003	Web site
Mon	Feb 17 02:59:55	2003	Haiti
Sun	Feb 16 23:13:17	2003	lifelong education
Sun	Feb 16 21:55:58	2003	harada
Sun	Feb 16 21:52:37	2003	"information skills"
Sun	Feb 16 21:47:56	2003	"internet resources"
Sun	Feb 16 20:59:06	2003	"ready reference"
Sun	Feb 16 20:57:14	2003	ready reference
Sun	Feb 16 20:45:10	2003	asla
Sun	Feb 16 18:20:14	2003	informatin literacy
Sun	Feb 16 18:06:15	2003	information literacy
Sun	Feb 16 18:04:34	2003	information literacy
Sun	Feb 16 16:13:02	2003	policies
Sun	Feb 16 12:08:35	2003	"first school librarian"
Sun	Feb 16 11:47:19	2003	history of school libraries
Sun	Feb 16 07:39:00	2003	scheduling
Sun	Feb 16 06:23:34	2003	ifla
Sat	Feb 15 16:45:18	2003	Salem Witch Trials
Sat	Feb 15 16:06:44	2003	school library web page award
Sat	Feb 15 15:30:44	2003	uk copyright law
Sat	Feb 15 11:17:02	2003	accelerated reader
Sat	Feb 15 10:54:36	2003	award winning school web sites
Sat	Feb 15 07:06:09	2003	school libraries
Sat	Feb 15 06:46:43	2003	collaboration articles
Sat	Feb 15 02:18:59	2003	"job analysis"
Sat	Feb 15 02:16:34	2003	job analysis

Figure 6. An example of the information about searches carried out on the site search engine, provided in the weekly reports to the Webmaster.

Table 1  
Keywords Used in Searching School Libraries Online  
September/October/November 2001 (Keywords Used 10 or More Times)

Keyword	Number	Keyword	Number
Library/libraries	164	Evaluation	15
School/schools	98	Flexible	15
Information	65	Scheduling	15
Literacy	55	Automation	14
book/books	39	Development	14
Day	24	Award	13
Education	24	goal/goals	13
Managment/management	23	International	13
Librarian/librarians	22	policy/policies	12
plan/plans	18	Website	12
Primary	18	Reference	11
role/roles	18	conference/conferences	10
Reading	16	Design	10
skill/skills	16	Ross	10
Standard/standards	16	Todd	10
Student/students	16	Volunteers	10

*Note.* Total number of searches: 1,153 Total number of unique keywords used: 411.

Interest Group (SIG). However, even keeping this information up to date has proved a challenge for the Chair of the International Focus SIG. There is an opening here for an information provider, but a glance at the mission and objectives of IASL does not suggest that the Association should be that provider.

Table 2 indicates the types of searches using site search engine in the three-month period September to November 2001. Most were topic or subject searches on topics related to the interests of school librarians (the first group in the Table). However, some users were clearly searching for information specific to IASL (e.g., the International School Library Day logo), a sensible use of the IASL Web site. Other relatively common searches were for a person, country or place, document, or organization or institution. However, some of the searches raised questions about whether the aims of the Association and the Web site had been made clear enough: for example, searches for information about the solar system or dolphins. In all types of searches were some indications of problems with search strategies (and I am not the first Webmaster to notice this; see, e.g., Klein, 2003). Most searches were simple, truncation and Boolean operators were almost never used, nor were alternative terms (e.g., primary/elementary) or spellings (e.g., program/programme). It is clear that users wish to be able to search

without first having to read instructions, and search engines have not yet reached a level of sophistication where they can handle this except for simple queries. However, it should be borne in mind if and when a new search engine is selected.

From time to time, I have selected searches repeated to gain an indication of what users see in response to their queries. Search failures, or those reasonable searches for which poor results are returned, can suggest areas where the content of the Web site needs development. Where content exists on the site that might meet the need as expressed in the search terms, but

Table 2  
Types of Searches Carried Out on School Libraries Online  
September/October/November 2001

<i>Type of Search</i>	<i>Examples of Searches</i>
Search for Professional Topic	information literacy mission statement school library policies knowledge management intellectual freedom
Search for IASL Information	international school library day logo conference manual school library Web page award school libraries worldwide isld
Search on Person's Name	Kuhlthau Genco ross todd barbara braxton blanche woolls
Search for Country/Place	Norway great britain singapore pennsylvania beijing
Search for Document/Title	Shiloh library power "the hobbit" animal farm texas study
Search for Organization	singapore library board univ of southern calif methodist ladies' college ifla morris plains borough school
Search for Another Topic	acids and alkalis planets solar system weather dolphin studies tigris and euphrates river

did not show in the search results, I consider the use of additional appropriate keywords in the metadata of the relevant documents. This happens most often where the official title of a document does not reflect the name by which it is generally known. An example would be the "Partnership Agreement for Hosting an IASL Conference," for which the most common search term seems to be *proposal to host an IASL conference* (now used in the metadata for the page).

### *What parts of the Web site are most used?*

Information about the use of various sections of *School Libraries Online* came from the NetTracker service and comes now from the Open Tracker service. Figure 7 gives an indication of the statistics supplied by the Open Tracker service. These include, for example, statistics from counters placed on selected pages throughout the Web site (including the main pages of each section). In the early days, as recorded by NetTracker, the most used section of the site was the collection of links to "School Library Resources on the Internet" (Clyde, in press). However, evidence from usage patterns on *School Libraries Online* shows that users' needs for information and resources are also changing. Proportionately less use is being recorded of

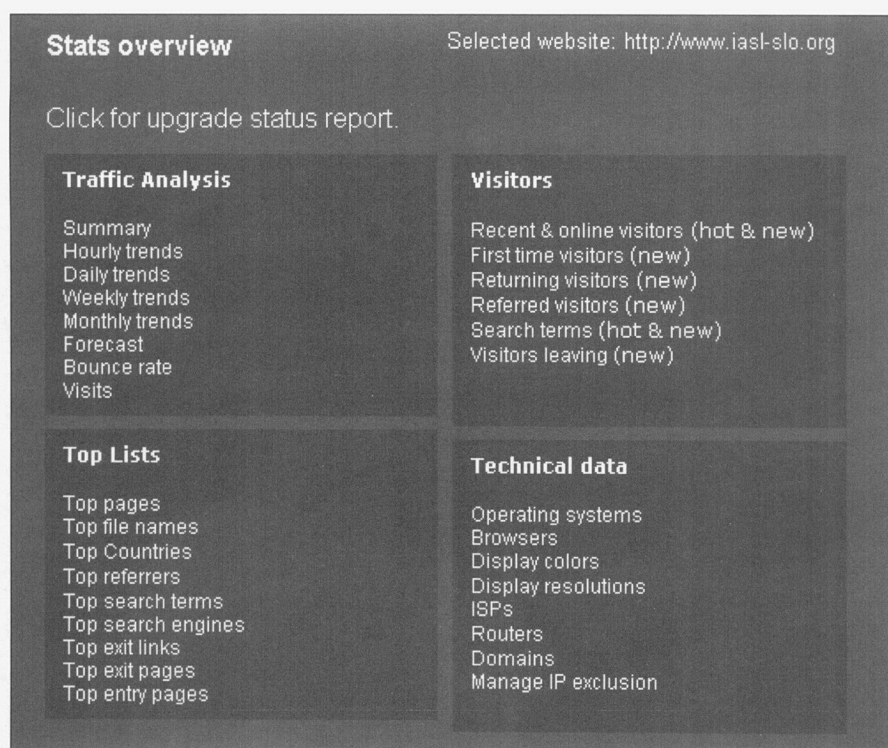


Figure 7. Web site statistics available from Open Tracker, a subscription service <http://www3.opentracker.net>



the sections of the site designed to help with Internet exploration, and proportionately more of professional information, professional documents, and news services. However, the actual numbers of people using the site as a starting point for Internet exploration remains as high as ever, although this use now represents a smaller proportion of the total.

*Is use of the Web site increasing?*

The NetTracker statistics showed that the number of users (and the number of first-time users) accessing the site each week grew throughout the period when this service was used. Evidence from the Open Tracker service shows that overall use has continued to increase, although because the two services have used different bases for their counts, it is not possible to produce a reliable time series. However, as suggested above, the measurement of site use is complex. Statistics for first-time visits, return visits, number of pages visited, and amount of time each user spends on the site all show increases, but these numbers are to a degree unreliable. For example, the tracker cannot pick up a user's second visit if it is made from another computer. Even the UNIX log files that have been available to the Webmaster from the ISP since 2003 present only a broad picture of use.

Information collated from the monthly reports of the site search engine also presents a complex and incomplete picture of use. Table 3 collates the figures for the number of searches per month since September 2001. The number of searches performed increased through 2002 and 2003, but in 2004 appeared to decline. However, possibly changes to the site directory on the home page and improvements to the menus added to the headers

Table 3  
Number of Searches Carried Out on the Site Search Engine on  
School Libraries Online, September 2001 to February 2005 Inclusive

Month	2001	2002	2003	2004	2005	Average
January		471	429	554	600	513.5
February		552	673	645	523	598.2
March		524	805	704		677.6
April		623	565	635		607.6
May		534	611	540		561.6
June		521	536	449		502.0
July		588	521	437		515.3
August		404	448	421		424.3
September	309	681	699	760		612.2
October	559	876	753	643		707.7
November	521	649	644	523		584.2
December	307	351	420	312		347.5
Totals	-	6774	7104	6623	-	

and footers of each page in the last few years mean that people can find the information they need without using the search engine. In support of this are the figures from Open Tracker that indicate that the number of visitors to the site and number of visits continue to increase although the search engine statistics suggest a different picture.

However, Table 3 does indicate some seasonal variations in use of the search engine and perhaps of the Web site as a whole. North American users tend to outnumber those from other continents (from NetTracker and Open Tracker), and the average number of searches per month shows the heaviest use of the search engine during the North American school year, with the lowest use in the summer months and the Christmas period. This suggests a need to promote the Web site more actively to users on other continents. However, it also indicates a wider problem for the Association. According to IASL's constitution, the operating language of the Association is English, and this is reflected in Web site content. Nevertheless, it also presents a barrier to many potential users from Europe and South America, for example.

#### *How do users feel about their experience of School Libraries Online?*

Various strategies can be used to gain an understanding of users' experiences online and their perceptions of the Web site. Ranging from low-cost and simple tools like online guest books to techniques that require considerable research experience or knowledge of technology, these strategies include user response forms, online surveys, focus groups, observation of users as they interact with the site, and oral protocols (think-alouds or users talking through their experiences as they use the site, and think-afters or users discussing their online experiences afterward). All have their strengths and limitations. Cost and time factors have prevented the use of some of these strategies to date, but they could play a part in the future (see "Planning for a Major Evaluation" below).

The entries recorded in the online guest book on *School Libraries Online* until 2003 were generally favorable. From a user in the United States: "This is so helpful. It saves me much time, since almost everything a librarian could want is located on this site." From a user in Australia: "Great site for a beginning teacher librarian such as me." And from Italy: "Very useful and helpful site! It always makes interesting reading and keeps me in touch with international school librarianship." The comments were unsolicited, and it is appreciated that users took the time to provide this positive feedback. However, comments in guest books generally come from people who either love or hate the site or who are otherwise motivated to provide feedback in this way.

Therefore, other means of obtaining feedback have also been used from time to time. One is a user feedback form available on the Web site primarily for use in professional development workshops. Participants see a demonstration of the main features of *School Libraries Online*, then explore

the site themselves before providing an evaluation and comments. The form is available to any trainers who wish to use *School Libraries Online* with groups, but the feedback comes to the Webmaster in the first instance. Figure 8 shows the top of this interactive form, which has 11 questions in all and can be completed in approximately five to seven minutes.

Table 4 collates responses to two questions on this form from a group of 15 people who attended a professional development workshop for teacher librarians in Australia in March 2001, which introduced them to *School Libraries Online*. The workshop was conducted by a local Internet trainer, not by the Webmaster. Almost half the group (7 of 15) thought it was *very easy* or *easy* to find information on the site; however, four people found it *difficult* or *very difficult* despite a demonstration as part of the workshop. Although their own information skills may have been a factor in this (and no information is available about the participants), it may also be because this workshop took place when the site search engine was still new and its features were still being optimized. Not only has the performance of the search engine improved, but other navigation tools on the site have also been improved (some improvements in response to comments from participants in similar workshops). Responses to the question about the relevance of the information on *School Libraries Online* were overall more favorable, but the evaluation was carried out in the context of a professional development workshop that focused on professional information. Thus the responses on this form must be considered in the context in which the data collection took place and the state of development of the Web site at the time.

**iasl** SCHOOL LIBRARIES ONLINE  
International Association of School Librarianship (IASL)

Home IASL Newsletter Publications IASL Newsletter Reviews Conferences Publications Internet Resources IASL-UK  
Committee Editor Journal Editor Awards IASL Editors IASL Documents Research Administration

### IASL WEB SITE USER RESPONSE FORM

This form has been designed to collect information from users of the IASL Web site, School Libraries Online, information that will help with the further development of the site to meet the needs of IASL members and school librarians worldwide. Please complete the form online, and then submit it by clicking on the button at the bottom of the page. Thank you for your time and input.

Name  Position

Country of residence

1. Are you currently an IASL member? ☒ Yes ☐ No

2. How did you first find out about the IASL Web site (School Libraries Online)?

Figure 8. The opening of the IASL Web Site User Response Form on the IASL Web site School Libraries Online. This interactive form has been designed to collect data from users of the Web site, and particularly from groups of users attending professional development activities.

Table 4  
Responses to a Web-based Survey of Users of School Libraries Online  
Professional Development Day, Australia, March 2001

<i>How easy was it to find information on SLO?</i>	<i>Number</i>	<i>How would you rate the relevance of information on SLO to your needs?</i>	<i>Number</i>
Very easy	2	Very relevant	4
Easy	5	Relevant	5
OK	4	OK	4
Difficult	3	Not very relevant	1
Very difficult	1	Irrelevant	1
No opinion	-	No opinion	-
Total	15	Total	15

This partial analysis of feedback from one workshop (Table 4) is presented here as an example of a source of information about users of a Web site. It does not provide detailed information about the users' experiences of the site, nor does it provide any information about the users themselves that would help us to gain a better understanding of their perceptions. However, within the time constraints of a workshop setting and with data coming in from other workshops, it does help to pinpoint areas of concern. Although by itself it does not provide conclusive evidence, when used in combination with other data collection techniques, it adds to the emerging picture of users of the Web site. The use of more sophisticated strategies such as focus groups provides more comprehensive data, but requires more time and money.

*Users, and Their Needs, Are Changing*

Users, their needs, and their perceptions are not static. With this in mind, I monitor them on an ongoing basis as part of the strategic planning process for the Web site. One factor that affects users' perceptions and needs is the ongoing change in the Internet itself, and particularly the World Wide Web. The Web is increasing in size, and the resources being made available through it are increasingly varied (O'Neill, Lavoie, & Bennett, 2003). Another factor that affects users' needs and perceptions is the ongoing change in how people access the Internet. Personal computers are becoming more powerful (Eng, 2001); browser software is providing more features (see, e.g., Yahoo's Browser Directory); and the number of people (at least in some countries) with broadband connections to the Internet is growing (Leichtman Research, 2003). So users come to Web sites with higher expectations as time passes, even though some still access the Internet using older computers and earlier versions of browsers. A third factor is that the number of users of the Internet as a whole is still increasing

(Nielsen/NetRatings, 2003). It appears that users of *School Libraries Online* reflect these general trends. Evidence from users' comments also suggests that users as a whole are becoming more sophisticated, although we still support many who have little experience of the Internet. A Web site that met the needs of experienced users three years ago will not meet the needs of those users today. The challenge for the Webmaster is to develop the Web site such that the needs of sophisticated users continue to be met without losing people for whom *School Libraries Online* is their introduction to resources on the Internet.

### Planning for a Major Evaluation

After 10 years in operation, it seems timely to plan a major assessment and evaluation of *School Libraries Online* for 2005-2006. The surviving data collected through the ongoing formative evaluation over the decade, as described in this article, will feed into the assessment process. The first step in this major evaluation, reported elsewhere (Clyde, in press b), was a comprehensive review of the library and information science literature related to Web site evaluation carried out early in 2005 to collect information about possible assessment and evaluation strategies. This literature review produced a great deal of information about the strengths and limitations of various strategies such as usability testing, user satisfaction studies, service quality assessment, accessibility testing, benchmarking, impact analysis, and the application of predetermined criteria for the evaluation of a Web site. The literature review also produced a great deal of information about the data collection methods most typically associated with each of these strategies (including questionnaires, focus groups, oral protocols, observation, interviews, and use of computer log files). In addition, the literature revealed possible sources of evaluation instruments such as questionnaires and interview schedules that might be adapted (with permission) for the evaluation of *School Libraries Online* and possible sources of protocols for selecting participants for evaluation studies (Beattie, 2003; Nielsen, 2003). At the time of writing, the evaluation strategies to be used are being discussed in the light of the literature review, but have not been selected. Among factors to be considered are the type of information that each strategy will produce about the Web site, the cost, and the implications for evaluators' time. Although recognizing that strategies like full usability testing in a specialist facility would better be carried out on a more regular basis (Fraser, 2002), this has not been possible (except in a limited form) to date. In addition to evaluating the Web site, the research in 2005-2006 will also seek to identify the best strategies for future ongoing evaluation of *School Libraries Online*.

### Conclusion

From the beginning, even from the initial Web site planning stage, research strategies have played a part in the ongoing formative evaluation of IASL's *School Libraries Online* Web site, providing information that has supported

the development of the site through a decade. Desk research, tracking services, computer log files, and information provided by users of the site (through the guest book and the online data collection form, among other strategies) have contributed to ongoing evaluation. There have been problems, including loss of data and information about the development of the site. It could be said that if some research has been beneficial, then more research might have helped a great deal more, although it also has to be said that there have been constraints including funding and the amount of time available to a volunteer Webmaster. Nevertheless, the case of *School Libraries Online* does illustrate the value of research (and sometimes its limitations) in the ongoing Web site development process. The benefits have been clear enough so far for us to assume that a larger and more concentrated evaluation after the 10th year of operation of the site would be at least equally beneficial. A new literature review has suggested some strategies that could be used for this new work; now the resources have to be found to support a major evaluation.

## References

- Beattie, J. (2002). Customer satisfaction—Do you know what they think of your information service? *Free Pint*, 110. Retrieved March 30, 2005, from the World Wide Web: <http://www.freepint.com/issues/180402.htm#feature>
- Clyde, L.A. (1997a). *Internet hot spots for teacher librarians*. The IASL Web site. Information paper for the second ITEC virtual conference, Schooling and the Networked World, April 1997. Retrieved March 28, 2005 from the World Wide Web: <http://www.hi.is/~anne/iaslweb.html>
- Clyde, L.A. (1997b). *School libraries and the electronic community: The Internet connection*. Lanham, MD: Scarecrow Press.
- Clyde, L.A. (1998a). Weaving an international Web. *Orana*, 34(3), November, 11-17.
- Clyde, L.A. (1998b). International Association of School Librarianship Web site. *School Libraries in Canada*, 18(1), 7-8.
- Clyde, L.A. (2000). A strategic planning approach to Web site management. *The Electronic Library*, 18(2), 97-108.
- Clyde, L.A. (in press a). Developing an international Web site for school librarians. *Indian Journal of Library and Information Science*.
- Clyde, L.A. (in press a). *Evaluating Web sites: A library and information science literature review* (in publication).
- Dempsey, L. (2000). The subject gateway: Experiences and issues based on the emergence of the Resource Discovery Network. *Online Information Review*, 24, 8-23.
- Eng, P. (2001). Not your father's PC. *ABCNews.com*, 10 August. Retrieved April 21, 2003, from the World Wide Web: <http://abcnews.go.com/sections/scitech/DailyNews/pcfutur010810.html>
- Fraser, J. (2002). The culture of usability: How to spend less and get more from your usability-testing program. *New Architect*, August. Retrieved March 30, 2005, from the World Wide Web: <http://www.newarchitectmag.com/documents/s=2453/na0802b/index.html>
- International Association of School Librarianship (IASL). (n.d.). *The mission of IASL*. Retrieved March 28, 2005 from the World Wide Web: <http://www.iasl-slo.org/iaslinfo.html>
- International Association of School Librarianship (IASL). (n.d.). *Objectives of the International Association of School Librarianship*. Retrieved March 28, 2005, from the World Wide Web: <http://www.iasl-slo.org/objectives.html>
- Klein, L.R. (2003). The expert user is dead. *Library Journal*, 15 October. Retrieved March 30, 2005, from the World Wide Web: <http://www.libraryjournal.com/article/CA323336&>

- Koch, T. (2000). Quality-controlled subject gateways: Definitions, topologies, empirical overview. *Online Information Review*, 24, 24-34
- Leichtman Research. (2003). More high-speed net subscribers in US. *NUA Internet Surveys*, April 2. Retrieved April 20, 2003, from the World Wide Web: [http://www.nua.ie/surveys/?f=VS&art\\_id=905358754&rel=true](http://www.nua.ie/surveys/?f=VS&art_id=905358754&rel=true)
- Nielsen, J. (2003). *Recruiting test participants for usability studies*. 20 January. Retrieved March 30, 2005, from the World Wide Web: <http://www.useit.com/alertbox/20030120.html>
- Nielsen/NetRatings. (2003). *Year over year trending at-work and at-home for the active web population*. Retrieved April 21, 2003, from the World Wide Web: <http://www.nielsen-netratings.com/>
- O'Neill, E.T., Lavoie, B.F., & Bennett, R. (2003). Trends in the evolution of the public Web, 1998-2002. *D-Lib Magazine*, 9(4), April. Retrieved March 30, 2005, from the World Wide Web: <http://www.dlib.org/dlib/april03/lavoie/04lavoie.html>
- Yahoo! *Browsers directory*. Retrieved March 30, 2005 from the World Wide Web: [http://dir.yahoo.com/Computers\\_and\\_Internet/software/internet/world\\_wide\\_web/browsers/](http://dir.yahoo.com/Computers_and_Internet/software/internet/world_wide_web/browsers/)

### Author Note

Anne Clyde is a professor in the Department of Library and Information Science in the University of Iceland and an adjunct professor in the School of Computer and Information Science at Edith Cowan University in Perth, Western Australia. An Australian citizen, she has degrees from the University of Sydney and the James Cook University of North Queensland. Her current research interests relate to the use of the Internet and online information services in a range of settings. Her books include *Weblogs and Libraries* (2004), *An Introduction to the Internet* (1994, 12th ed., 2004), *Managing InfoTech in School Library Media Centers* (1999), *School Libraries and the Electronic Community: The Internet Connection* (1997), and *Computer Applications in Libraries* (1993). She writes a regular column on *InfoTech* for the US journal *Teacher Librarian*. Anne is Webmaster for the International Association of School Librarianship and the 2003-2007 Chair of the IFLA Section of School Libraries and Resource Centers.

Sadly, Anne Clyde died on September 18, 2005, just before this article was published. She was a dedicated member of the SLW Editorial Board and a gifted researcher and writer. She will be missed.